AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Original) An exponential signal generator comprising:

a first memory for storing a first exponential value;

a scale unit coupled to the first memory and operable to receive the first exponential value and produce a scaled value; and

a first adder coupled to the first memory and operable to add the first exponential value and the scaled value to produce a new first exponential value for storing in the first memory.

22. (Original) An exponential signal generator in accordance with claim 21, wherein the scale unit comprises a multiplier.

23. (Original) An exponential signal generator in accordance with claim 21, wherein the scale unit comprises a shifter.

24. (Original) An exponential signal generator in accordance with claim 23, wherein the scale unit further comprises a means for negating the first exponential value.

25. (Original) An exponential signal generator in accordance with claim 21, further comprising a state machine operable to control the first memory, the scale unit and the first adder.

26. (Original) An exponential signal generator in accordance with claim 25, further comprising:

a system clock; and

a clock counter operable to count cycles of the system clock, wherein the state machine is responsive the clock counter and controls the first adder to operate one in every time step of N_{clock} cycles of the system clock.

27. (Original) An exponential signal generator in accordance with claim 26, further comprising a segment counter operable to count time segments, wherein the state machine is responsive the segment counter and terminates operation of the exponential signal generator once N_{sweep} time segments have elapsed.

28. (Original) An exponential signal generator in accordance with claim 26, further comprising a first step counter operable to count time steps, wherein the state machine is responsive the first step counter and controls the scale unit to operate once in every M time steps.

29. (Original) An exponential signal generator in accordance with claim 28, further comprising a second step counter operable to count time steps, wherein the state machine is

responsive the second step counter and terminates operation of the exponential signal generator once a specified number of time steps have elapsed.

30. (Original) An exponential signal generator in accordance with claim 25, further comprising:

a second memory for storing a second exponential value;

a second adder coupled to the second memory and operable to add the second exponential value and the first exponential value to produce a new second exponential value.

31. (Original) An exponential signal generator in accordance with claim 25, further comprising:

a system clock;

a clock counter operable to count cycles of the system clock;

a step counter operable to count time steps; and wherein the state machine is responsive the clock counter and step counter and controls the second adder to operate once in every time step of N_{clock} cycles of the system clock and controls the first adder and scale unit to operate once in every M time steps.

32. (Original) An exponential signal generator in accordance with claim 30, further comprising a segment counter operable to count time segments, wherein the state machine is responsive the segment counter and terminates operation of the

exponential signal generator once N_{sweep} time segments have elapsed.

33. (Original) An exponential signal generator in accordance with claim 21, further comprising: a test signal generator operable to produce a test signal having a frequency proportional to the first exponential value.

34. (Original) An exponential signal generator in accordance with claim 33, further comprising a user interface operable to receive an initial exponential value f_0 a final exponential value f_p and a duration of operation t_p of the exponential signal generator from a user.

35. (Original) An exponential signal generator comprising:

a means for retrieving an exponential value representative of an exponential signal;

means for scaling the exponential value by a scale factor to produce a scaled value;

means for calculating a sum of the exponential value and the scaled value; and

a means for storing the sum of the exponential value and the scaled value.

36. (Original) An exponential signal generator in accordance with claim 35, wherein the means for scaling the exponential

value comprises a means for shifting the exponential value by S binary places.

37. (Original) An exponential signal generator in accordance with claim 36, wherein the means for scaling the exponential value further comprises a means for negating the exponential value.

38. (Original) An exponential signal generator in accordance with claim 36, further comprising a means for adjusting the rate of operation of the exponential signal generator.

39. (Original) An exponential signal generator in accordance with claim 38, wherein the means for adjusting the rate of operation of the exponential signal generator is dependent upon the initial and final values of the exponential signal, the duration of the exponential signal and the shift value S.

40. (Original) An exponential signal generator in accordance with claim 36, wherein the means for scaling has a lower rate of operation than means for calculating.

41. (Original) An exponential signal generator in accordance with claim 35, further comprising a means for negating the scaled value.

42. (Original) An exponential signal generator in accordance with claim 35, further comprising a means for determining the scale factor dependent upon an initial exponential value f_0 a final exponential value f_p and a duration of operation t_p of the exponential signal generator.

43. (Original) An exponential signal generator in accordance with claim 42, wherein the scale factor is $k = \left(\dfrac{fp}{f0}\right)^{\frac{T}{tp}} - 1$, wherein T is the step time of the exponential signal generator.

44. (Original) An exponential signal generator in accordance with claim 42, further comprising a means for generating a test signal having a frequency proportional to the exponential value.

45. (Original) An exponential signal generator in accordance with claim 42, further comprising a means for generating a test signal having a fundamental period proportional to the exponential value.